# Water Recycling Saves Hotel Industry a Bundle

*"The U.S. DOE **ENERGY STAR®** program provides a great benefit to the country, since it effectively promotes both energy and water savings. The fact that outside contractors are utilized has enhanced the efficiency of transferring technology and sharing information."*

*—Jim Riesenberger*
*Vice President,*
*Water Management Services*
*San Diego, CA*

Red Lion Hotels, a large Western hotel chain, was dumping an average of 55,000 gallons of water a day to the city sewer system from its central laundry in Portland, Oregon, before it joined DOE's Hospitality Industry Forum on Energy Conservation (HIFEC). HIFEC was organized by DOE to speed the introduction of highly efficient technology into the hotel industry. In cooperation with HIFEC and Red Lion, DOE developed a project to demonstrate a new water filtration system to recycle wastewater and recover waste heat from the laundry, which washes up to 25,000 pounds of laundry per day.

## DOE's On-Site Monitoring Optimizes System Performance

Wastewater Resources Incorporated, the filtration system manufacturer, and Red Lion laundry staff installed the system in 1995. DOE's Pacific Northwest National Laboratory conducted on-site and remote monitoring of the laundry facility over a 12-month period before and after installation. PNNL staff worked continuously with Red Lion and Wastewater Resources staff during that time to improve the system configuration and operation to optimize the system's performance.

The DOE microfiltration metering project was an excellent testbed for water recovery technology. Although water purification through membrane filtration has been successfully utilized in industrial processes for a number of years, its application to commercial laundries is a recent development. At the time of the installation only three commercial laundries were using membrane filtration for water recovery.

## A Win-Win for Partners and the Environment

The study resulted in a host of win-win benefits for its partners:

- The continuous monitoring data, along with feedback on operations from the laundry staff and a detergent chemical specialist, enabled the filtration unit manufacturer to make continuous improvements to the technology during the course of the study and eventually resulted in a new product.
- Data collection and analysis provided valuable data on the economics of water filtration.
- The project evaluation identified the pitfalls and shortcomings to avoid in water filtration retrofits.

*"The laundry linen business tends to be a very tight-knit technology group with little information transferring to other related industries. The U.S. DOE/Red Lion micro-filtration metering project and the wastewater treatment and water reuse seminars are an excellent way of sharing information on new filtration techniques, not only to the laundry industry but cross-pollinating to other industries such as plating, semiconductor and petro-chemical processes."*

*—Chuck Decker*
*Vice President,*
*William Ryan Company*
*Danville, CA*

- The study heightened the awareness of the hotel industry and showed them that there are alternatives to the "traditional way of doing business."
- Red Lion reduced their water, sewer, and energy bills by a projected $41,000/year.

The filtration project has already yielded a number of natural resource and economic benefits. In 1996, the system reduced water use at the Portland laundry by more than 50% and reduced the energy required to heat water by 44%. Capital costs for the filtration system were $180,000 with a payback of about four years.

## Transferring the Technology

The Red Lion micro-filtration project is a good example of how DOE can form partnerships with businesses to provide the technical expertise and support to solve some of industry's most vexing conservation problems. This project was featured as part of the National Environmental Technology Challenge and Red Lion Hotels was awarded a BEST Business Award for resource conservation by the City of Portland. Red Lion and other members of the hotel industry are now applying the technology at other sites.

DOE is spreading the word on the success of this project. Workshops were organized in numerous locations in the U.S. In addition, staff have been asked to speak at several conferences and meetings to describe the project. Electric utilities, water utilities, and local municipalities around the country have asked ENERGY STAR staff to share lessons learned from the micro-filtration project.

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